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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/937,623	12/28/2001	Noriyuki Matsumoto	109667	2068

7590 10/06/2005

Oliff & Berridge
Suite 500
277 South Washington Street
Alexandria, VA 22314

EXAMINER

BHATNAGAR, ANAND P

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/937,623

Applicant(s)

MATSUMOTO ET AL.

Examiner

Anand Bhatnagar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-9, 14 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-13 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

1. Applicant's election with traverse of the species restriction of claims 1-16 in the reply filed on 05/12/05 is acknowledged. The traversal is on the ground(s) that "if the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims to independent or distinct inventions." This is not found persuasive because applicant's specifications clearly and distinctly show, in the figures as well as in the detailed description, the different embodiments on determining the quality of fingerprint images. The requirement is still deemed proper and is therefore made FINAL.
2. Applicant has elected Species 3, corresponding to claims 10-13 and 16, with traverse. Therefore, claims 1-9, 14, and 15 are withdrawn.

DETAILED ACTION

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claims 10 and 11: Applicant sets up two areas (claim 10) in a fingerprint image, one is the established area and the other is a comparison area, while in claim 11, these

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areas are defined as "lines" which is confusing since, in general, a line is not considered to have an area unless it has a significant width. This makes the claims vague and indefinite. These claims will be addressed as best understood.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10, 11, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Hara (U.S. patent 5,040,224).

Regarding claim 10: Hara discloses a method for evaluating a fingerprint image, comprising the steps of:

obtaining a density pattern of an established area provided within a fingerprint image (fig. 7 and col. 5 lines 26-35, wherein the picture elements on a line A sub dc are determined. This line is read as the established area);

obtaining a density pattern of a comparison area provided by shifting the established area in predetermined direction and by predetermined distance (Hara; col. 5 lines 25-32 wherein the line A sub d'c' is established. This is read as the comparison area);

calculating a similarity between the two density patterns obtained in said processing steps (fig. 8 wherein the density patterns of the two areas is determined); and

evaluating the amount of noise contained within the fingerprint image based upon the amount of the similarity calculated in said calculation step (col. 5 lines 32-37, wherein the variation "similarity" determines the amount of dust or contamination, read as noise. No variation means no dust/contamination and vice versa. If dust or noise present then these patterns would be different then normal).

Regarding claim 11: A method wherein the established area is a straight line provided within the fingerprint image, the comparison area is a straight line provided to correspond with the provided straight line, and the similarity of the density pattern of each area is evaluated by the similarity of a waveform signal, wherein the density of the points on the straight line composing each area is regard as a continuous waveform signal in the direction of the straight line (figs. 7 and 8, wherein the two waveforms of the density patterns are compared).

Regarding claim 16 it is rejected for the combination of reasons of claims 10 and 11 and for the limitation of: means for registering the fingerprint and/or verifying the fingerprint using the fingerprint image when the noise evaluation means determines that the fingerprint image contains less than a predetermined amount of noise. It is inherent that the image is only used for verification and/or registered if the noise is below a certain threshold since the noise is determined

in the system of Hara. If the noise is too much in the image then this image would not be useful for comparison.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

A.) Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara (U.S. patent 5,040,224) and Hamada et al. (U.S. patent 5,426,708).

Regarding claim 12: A method wherein the similarity calculating step comprises the step of obtaining spectral characteristics by frequency converting the waveform signal, while regarding it to be a time series signal, and calculating the similarity between the spectrum characteristics of the two corresponding waveform signals.

Hara discloses a fingerprint evaluation system wherein the density points of reference lines are used to determine the ridge line information. Hara further discloses to obtain the curve of density points of the fingerprint image (Hara; figs. 7-9). Hara does not teach to get the frequency of the curve/waveform in order to determine the ridge line information. Hamada et al. teaches to determine the frequency spectrum of a fingerprint image in order to determine the ridge lines in the image (col. 1 lines 60-65 and col. 5 lines 47-55, the frequency spectrum is

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read as a time series signal). It would have been obvious to one skilled in the art to combine the teaching of Hamada et al. to that of Hara because they are analogous in fingerprint analysis. One in the art would have been motivated to incorporate the teaching of Hamada et al. to that of Hara in order to reduce the data size compared to the data size of the fingerprint image (Hamada et al.; col. 2 lines 3-6).

Regarding claim 13. A method wherein the similarity calculating step comprises the step of obtaining an average pitch from said waveform signal, and calculating the similarity based upon a difference between the average pitches of the two corresponding waveform signals. Examiner takes Official Notice Comparing pitches of waveforms is well known in image processing.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Riganati et al. (U.S. patent 4,156,230) for determining the peaks and valleys of a fingerprint image.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anand Bhatnagar whose telephone number is (571) 272-7416, whose supervisor is Jingge Wu whose number is (571) 272-

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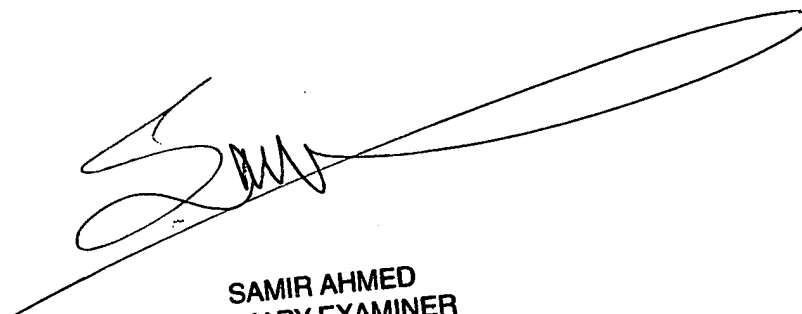
7429, Central fax is 571-273-8300, and Tech center 2600 customer service office number is 703-306-0377.

AB

Anand Bhatnagar

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October 2, 2005


SAMIR AHMED
PRIMARY EXAMINER